

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
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Digital Broadcast Copy Protection)	MB Docket No. 02-230
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**COMMENTS OF THE COMPUTER & COMMUNICATIONS INDUSTRY
ASSOCIATION**

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CONTENTS

I	Introduction	4
II	The Broadcast Flag	5
	A--Origins of the Broadcast Protection Discussion Group's Broadcast Flag Proposal	5
	B--What The Flag Does	5
III	Technical Shortcomings of the Broadcast Flag Proposal	6
	A--The BPDG Proposal Is Not a Technical Standard	6
	B--All Content Is Subject To Facile Reproduction On the Internet	7
	C--Digital Reproduction Is Not Inherently Better Than Analog	7
	D--The BPDG Co-Chairs Proposal Will Not Significantly Reduce Illegal Copying.....	8
	E--No HDTV files Are Being Swapped On the Internet Now, and Will Not Be Anytime Soon.....	8
	F--Online Swapping of HDTV Files Is Infeasible.....	9
	G--Copy Protection Cannot Compete In A Peer-to-Peer world	11
IV	Historical Experience of Copy Controls	13
	A--The Music Industry's Experience Is Largely Irrelevant To This Proceeding	13
	B--The Co-Chair's Report ignores our industry's 25-year history of Combating illegal copying.....	14
V	Consequences of Adopting the Broadcast Flag	15
	A--The Broadcast Flag Proposal Will Require Many More Mandates In the Future	15

	B--The BPDG Proposal Will Lead To a Morass of Incompatible Devices and Standards	16
	C--HDTV Programming Is Growing Quickly And Shows No Signs Of Slowing	17
VI	Legal Impediments to Adoption of the BPDG Proposal	17
	A--The BPDG Proposal Abridges First Amendment Rights	17
	B--American Tradition, Innovation and Common Sense Argue Against Heavy-Handed Regulation of the Internet.....	18
	C--BPDG Proposal Violates The Balance That Congress Has Struck	18
	D--Government Action Must Be Fair and Equitable	19
	E--Economic Rationality Is Also Vital In This Proceeding.....	19
VII	Answers to specific questions posed by the Commission	20
VIII	Conclusion	24
	Endnotes.....	24

I Introduction:

The Computer & Communications Industry Association is a group of large, small and mid-sized technology companies committed to the proposition that open markets, open systems and open networks are critical to an efficient marketplace.

Over the years, we have been strong supporters of pro-competitive measures such as the Commission's Computer II ruling.¹ From our beginnings as active participants in proceedings against AT&T and IBM, through our current role as an intervenor in the case against Microsoft at the European Commission, we have recognized that technical regulation can be the monopolist's favorite cudgel. The ability to control industry standards – especially those mandated by government -- assures that those who cannot otherwise prevail in the marketplace can capture and maintain a dominant position. We therefore have profound concerns over this proceeding, which implicates standards setting processes, technology development, and copyright.

The American Legal Tradition Respects the Rights of Creators and User Alike

Copyright is, by definition, a balance of the rights of creators and freedom of expression protected by the First Amendment. Copyrights and patents are state grants of limited monopoly. They are justified under U.S. law only so long as they “promote the progress of science and useful arts, by securing for *limited times* to authors and inventors the exclusive right to their respective writings and discoveries.” (Emphasis added)² Copyright and its limitations – traditionally matters beyond the purview of the Federal Communications Commission – are the very heart of the matter now before the Commission.

Copyright, patent and trademark law are central to the computer and telecommunications industry. Our members retain countless intellectual property rights, and benefit from the creativity and inventions of others. Thus, we have participated in a large number of proceedings at the intersection of information technology and copyright, including the seminal *Sega Enterprises v. Accolade*,³ which affirmed the right of software makers to reverse engineer others' works for the purposes of developing interoperable products. In more recent years, we have remained deeply enmeshed in issues surrounding intellectual property. We, along with a handful of other industry organizations, helped negotiate key sections of the 1996 World Intellectual Property Organization (WIPO) treaty on online copyright in Geneva, as well as the Digital Millennium Copyright Act of 1998 (DMCA), which implemented the treaty in the United States. In addition to our work in copyright, we recently helped fight for – and win – the elimination of virtually all controls over the export of encryption technology. Encryption is vital to all widely deployed copy-control technologies in current use, including those technologies that make up the broadcast-flag proposal now before the Commission.

Given the knowledge we have gained from past and present endeavors, we urge the Commission to reject any attempt to enshrine into law the Broadcast Protection Discussion Group (BPDG) broadcast flag proposal. If the Commission chooses to

proceed, we believe the Commission should reject any attempts to promulgate the proposed Compliance and Robustness rules, which have been proposed to govern the flag's implementation. As we outline below, the proposed rules will severely distort the professed purpose of the marker, frustrate consumer rights and expectations and further delay an already troubled transition to digital broadcast television. Worse still, the proposal will fail to prevent the illegal copying its backers say it can stop.

DISCUSSION

II The Broadcast Flag

A --Origins of the Broadcast Protection Discussion Group's Broadcast Flag Proposal, and the Non-Consensus Co-Chairs Report

Content providers claim to have put forth this controversial proposal chiefly to avoid indiscriminate copying of their works over the Internet. That remains part of the report's goals. Unfortunately, the co-chairs, together with certain members of the content industry, have permitted many other objectives to creep into this proposal. In reality, the proposals found in the Compliance and Robustness Requirements document would effectively ban all copying not approved by the major motion picture studios. While the studios might desire such a regime, this unprecedented degree of control is a denial of consumers' rights and expectations, in conflict with fundamental First Amendment rights, and ultimately a futile endeavor.

B--What The Flag Does

The "broadcast flag" as such is no more than a few bytes of information appended to a digital-television signal. It performs no work, contains no "intelligence." It is simply notice that tells a compliant device that the broadcast is copyrighted. The flag indicates the creator's wishes as to whether it may be copied, and how it may be used. There is no controversy as to the form or essential function of this flag, and the flag is already part of the ATSC standards for digital television. The controversy, rather, revolves around over the controls Hollywood wishes to assert over devices and content through this flag, and how these controls will function

In discussions before the BPDG, Hollywood's representatives argued that all devices capable of receiving content containing the flag should be restricted so that unauthorized copying would be impossible, or nearly so. Content owners assert, via analogy to current controversies over file sharing, that piracy of free, over-the-air digital television programs will be sufficiently rampant as to justify the reworking of essentially all consumer electronics that can handle a digital-television signal or convert analog to digital. We outline below why this analogy is inappropriate, and why such a proposal makes little sense from the viewpoint of law, technology or economics.

III Technical Shortcomings of the Broadcast Flag Proposal

A--The BPDG Proposal Is Not a Technical Standard

Compounding this tension is another problem created by the BPDG proposal: The BPDG, despite its long efforts, has produced no actual technology standard for the implementation of the broadcast flag. The prospect of adapting BPDG-approved technologies to devices outside the local-area-network topology, for instance, remains only a dream. The Commission, therefore, is being told it must treat a mere wish list as though it were technological fact.

The fair use that was so crucial in *Sega* and other forms of lawful use of copyrighted works cannot be regulated by a mathematical algorithm or technological device. Fair use is that use which is not authorized by the creator but it nonetheless legal as determined by the courts.⁴ These determinations are inherently subjective, and often controversial, and must be resolved on a case-by-case basis. Any solution that does not allow for consumers' continued enjoyment of the full range of uses permitted under existing precedent – as well as those uses that come to fall under the protection of copyright law – will diminish the rights of copyright users and upset the careful balance that has existed for hundreds of years.

This matter is obviously important for consumers, and their need to access *legally* the body of other works for personal use is clear. Whether they are a Ph.D. candidate who needs to use copyrighted video footage for a thesis on popular culture, a proud father who wants to e-mail digital video of his daughter's soccer game, or a corporate executive who wants to watch video stored on her office computer while traveling, consumers, government and businesses alike need access to these works for their personal, non-commercial use. None of these things would be possible under the Co-Chairs proposal.

Yet, fair use is not just for consumers. It is not just for software developers who want to produce game cartridges for other companies' players. Fair use is for the entirety of society. Fair use, far from being a plaything of the ivory tower, is a concept that has run through our entire system of copyright since the time that it was established by the Founders. The more we limit fair use, the less likely we will enjoy the benefits of the creativity and innovation that are now possible under our intellectual property system. The more we dictate standards, the less room we have for broad accommodation and market-based solutions. Indeed, the broadcast flag proposal seems destined to create a cartel of content and technology producers that will decide who may prosper and who will not.

B--All Content Is Subject To Facile Reproduction on the Internet

It is axiomatic that personal computers copy. As data passes from keyboard to data bus, from data bus to random access memory and beyond, it replicates itself many times throughout the PC. It remains in numerous forms at once until written over by the data stream, be it from the keyboard, network or peripheral devices. Likewise, as data pass from one computer to the next, they can pass through 10 or more network nodes. In each case a copy of the data just transmitted remains. And in each case an expert forensics specialist is capable of recovering that data, even though it is no longer supposed to “be there.”

The same can be said, to one degree or another, of any Internet-connected device. Thus, when we speak of “copying” and “unauthorized reproduction” on computer networks, we must recognize that copying is what computers do by their very nature. These realities of technology and physics are understandably worrisome to many who contribute to the production of copyrighted material, be they rights of reproduction, display or performance.

Various parties have come before the Commission to argue that the emergence of digital television (DTV) has suddenly placed the intellectual property of broadcasters and producers at risk in ways in which it has never been before. Because the Internet and DTV each use bits and bytes, the reasoning goes, Hollywood's crown jewels are suddenly in the same boat with the music industry whose slumping sales, it is asserted, stem from Internet “piracy,” and nothing else.⁵ The problem faced by the motion picture studios, in fact, is in no way novel. Their solution, furthermore, will do essentially nothing to solve it.

C--Digital Reproduction Is Not Inherently Better Than Analog Reproduction

Hollywood has made much of the “perfect copies” argument in Washington. As some tell it, digital recordings are both higher quality and uniquely susceptible to circulation on the Internet. Analog recordings, they say, are of lower quality, and degrade with each successive copying. Each argument is misleading.

The technology used to make a recording has nothing to do with its quality or clarity; artists can and do produce world-beating recordings today with equipment that relies on analog equipment. In fact, digital recordings are actually only “approximations” of the actual, analog versions heard by the human ear or seen by the human eye. Once converted from analog to digital, however, any recording can be duplicated “perfectly,” so that a copy of a copy of a copy and so on a hundred times over sounds just as good or bad as the first made.

The desire to store digital sound and video in reasonably sized, easily transferred files on computer networks means that recordings intended for Internet distribution almost always sound worse than they did before they were placed on the Net. This is so because MP3,

MPEG⁶ and similar file formats are compression algorithms that reduce approximately tenfold the time needed to transfer a file and, conversely, the space it takes up on a computer hard disk. Some quality is inevitably lost in the process. This fact is important in the ongoing MP3 wars, but absolutely central to the Broadcast Flag proposal before you.

D--The BPDG Co-Chairs Proposal Will Not Significantly Reduce Illegal Copying.

The co-chairs report is irrelevant to the problems faced by content providers and content carriers alike. Its conclusions are based on a misconception of many basic characteristics of computing and network technologies. The proposal's cost is unknown, open-ended and will be determined largely by Hollywood, only to be borne by all citizens. In the end, this proposed copy-control regime will fail to prevent illegal copying in any significant way. It seems destined render obsolete overnight billions of dollars in consumer equipment and likely will anger millions of consumers. The proposal put forth by Hollywood, in short, is a path to higher costs, less choice, less innovation and widespread contempt for copyright itself.

E--HDTV files Are Not Being Swapped on the Internet Now, and Will Not Be Anytime Soon.

As Hollywood portrays the situation, the Internet stands ready to destroy not just the movie industry, but markets for television syndication rights, old-episode DVDs, and broadcast advertising, too. For unlike old, analog television, they tell us, digital television is crystal-clear, able to shipped on the Internet in a blink of an eye. The new DTV, they tell us, will be more susceptible to "piracy" than other formats.

This assertion begs a basic question that has not yet been answered: How much infringing redistribution of old television shows over the Internet is there now? We ask this question because we do not know, and have seen no credible study that attempts to quantify this phenomenon, much less put it forward as a serious problem. This, at least, must form part of the analysis of the Commission in the current proceeding. As we note above, it is trivially easy to convert an analog recording from video tape or other media to digital form, at which point all further copies can be made digitally. Yet, as we explain below, redistributing that recording over the Internet in full fidelity is a challenging task, one whose difficulty dwarfs that of redistributing low-resolution recordings. Thus, if illegal copying and Internet redistribution of analog television is not a major problem now, we see no reason to believe that any such problem will worsen with the mere introduction of digital TV. The "new" problem of digital TV, other words, is the "old" problem we have right here, right now, whatever it may be.

If the society -- and the IT industry in particular -- are to expend extensive resources on this problem, public policy demands that this unfunded mandate have a clear purpose and goal, as well as the means to achieve them.

Supporters of the co-chairs assert that the crystal-clear picture quality of digital television will make it irresistible to so-called file sharing. But this argument, too, is founded upon a deceptive premise: the idea that consumers will be able to capture, process and then reproduce these signals in fidelity far superior to that available over broadcast television now. The implication is consumers will retransmit those recordings over the Internet so easily that others will find it more practical and desirable to search for and illegally duplicate copies of varying quality onto DVD blanks (now selling for around \$7 each) than to spend \$10 to \$20 for legitimate product.

This premise is false now, and likely will be so for the foreseeable future.

F--Swapping HDTV Recordings Online Is Infeasible

We know that widespread copying and distribution of video content is unlikely to become practical any time soon because of the realities of networked computing today. Even at the fastest bandwidth available to consumers, a computer user needs to tie up a high-speed Internet connection for hours in order to download an already compressed, degraded copy of a DVD. Similar downloads can literally take 40 hours or more over a dial-up connection. While a typical full-length movie takes up 6 or 7 gigabytes of disk capacity, online copies of these files are almost always compressed into file sizes of 1.5 - 2 gigabytes or even smaller. Under these conditions, a user connected to a cable modem or very high-speed DSL connection can manage to download a copy in around four hours.

Yet, DVDs, at a resolution of 480 pixels, are at the very lowest end of DTV resolution. This is as also the resolution of standard analog broadcast.

The demands of true HDTV are truly staggering by comparison: high-definition television must be broadcast either in 720 or 1080 pixels of vertical resolution.

Below is a summary of various file formats and broadcast schemes, as well as the time and space needed to download recordings made with them:

Format Data Rate As Compressed for Broadcast Using MPEG

480/60i 184 Mb/s 3 to 8 Mb/s

480/60p 368 Mb/s 6 to 10 Mb/s

720/60p 1106 Mb/s 14 to 16 Mb/s

1080/60i 1244 Mb/s 18 Mb/s

Assuming transfer rates at 1 Megabit per second, this data implies the following:

1 hour program at 1080i = 18 hours to download

2 hour movie at 1080i = 36 hours to download

1 hour program at 720p = 14 hours to download

2 hour movie at 720p = 28 hours to download

Such numbers are remarkable. In essence, Hollywood asserts that consumers will tie up their computers and broadband Internet connections for literally days at a time in order to swap crystal-clear copies of HDTV broadcasts.

High-definition television, in its most compressed and lowest quality, travels at a staggering seven- to eight-megabits per second, or roughly seven to eight times the speed of the fastest consumer Internet connections commonly available today. Yet, even if a consumer managed to capture such a data stream, placing it on the Internet would prove even harder. A basic two-hour feature film, for instance, would take some 28 hours for even a cable-modem user to download. And it's unclear how such a user would store the torrent of data inherent to HDTV. A single 2-hour movie broadcast with progressive scanning would take up 72 Gigabytes of disk space, roughly equivalent to a full hard drive on most new, \$2,000 PCs.

Some motion-picture studios say that such illegal copying is bound to reduce viewership of syndicated reruns. That said, we wonder how many people will go through such gyrations. Today, for instance, a consumer can buy a full season of *The X-Files* reruns on DVD, complete with "bonus" scenes, subtitles and other additional content, for less than

\$100. If there is a group of consumers likely to spend so much time on duplicating goods that can be bought legally so cheaply, it must certainly describe a very small subset of the television-viewing public.

G--Copy Protection Cannot Compete In a Peer-To-Peer World

Music, videos, books on the Internet! Freely available to anyone without paying! The entertainment industry sees services like Napster as the death of its business, and it's using every technical and legal means possible to prevail against them. They want to implement widespread copy prevention of digital files, so that people can view or listen to content on their computer but can't copy or distribute it.

Abstractly, it is an impossible task. All entertainment media on the Internet (like everything else on the Internet) is just bits: ones and zeros. Bits are inherently copyable, easily and repeatedly. If you have a digital file -- text, music, video, or whatever -- you can make as many copies of that file as you want, do whatever you want with the copies. This is a natural law of the digital world, and makes copying on the Internet different from copying Rolex watches or Louis Vuitton luggage.

What the entertainment industry is trying to do is to use technology to contradict that natural law. They want a practical way to make copying hard enough to save their existing business. But they are doomed to fail.

--Bruce Schneier, Chief Technical Officer, Countepane Internet Security; Finalist, Department of Commerce Advanced Encryption Standard Competition; Author of Secrets and Lies and Applied Cryptography.²

Hollywood seeks to control who can and who cannot copy its television programming, and how they do it. This is logical, since nearly all copyright owners believe they have economic incentives to seek such control, without regard to the careful balance struck by the Founders, which makes such efforts constitutionally questionable. But there is another problem inherent to this quest: It is ultimately doomed to failure. The mathematics behind it are arcane, and the engineering even more complex, but the technical community is all but united in its conviction that copy control – even if marginally effective in the physical realm -- cannot significantly reduce illegal copying via the Internet once a copy of the work has entered the world of peer-to-peer file sharing. As we outline below, bandwidth constraints, law enforcement, convenience and basic ethics that govern the behavior of most people that will constrain much illegal copying for the foreseeable future.

Many copyright holders encode their digital works in order to prevent unauthorized duplication. These copy-control technologies use long streams of secret numbers and mathematical formulas known as cryptography to achieve this end. But the keys to these codes are inherently susceptible to compromise by someone with the requisite expertise and determination to do so. For unlike conventional cryptography used by the military, business and consumers, consumer electronics makers cannot, as a practical matter,

change these keys frequently for added security. Current digital rights management (DRM) schemes, rather, must use the same key in all devices to assure that the DVD, television broadcast or audio CD will play on all players. By definition, this means that a supposedly "secret" key is available on millions of devices and dozens of laboratories worldwide. Once compromised by a single person, keys are compromised entirely. The difficulty of preventing such a security failure is intuitively obvious. It is even clearer when one ponders the technical difficulties cryptographers have historically had in hiding keys from attackers.

We do not suggest that DRM schemes employing encryption can serve no purpose. Most *offline* DRM technology is more than secure enough to keep honest people honest and prevent most computer users from accessing or copying copyrighted content without authorization. Such a level of security, however, will not stop file trading on the Internet if bandwidth and storage space someday cease to be obstacles. Indeed, the lessons of the past few years are quite clear: essentially all unauthorized copies of DVDs on the Internet are available because the copy protection used to protect them was quickly broken and remains compromised. Indeed, the Internet makes possible not just the duplication of "cracked" DVDs, but the widespread dissemination of tools necessary to crack new ones. Already, there are several commercially available tools available for download that can be used to circumvent such protection when a consumer wishes to copy or upload to the Internet a DVD of his own choosing. Nothing in the BPDG proposal suggests that it will be more resistant to tampering than were the copy controls built into DVDs. And few serious observers would contend that DVDs have meaningful protection against illegal Internet distribution.

Given DRM's poor track record in preventing widespread unauthorized distribution of copyrighted content, DRM techniques applied to mass-market products are now widely recognized as largely ineffective by most technical experts within and outside the technology community. Perhaps most significant, however, is the spread of this view to technologists who work for companies with major stakes in DRM technology.

Consider the release last month of *The Darknet and the Future of Content Distribution* by Peter Biddle, Paul England, Marcus Peinado, and Bryan Willman, four researchers who work for Microsoft Corp., itself a major DRM producer. The paper describes in some detail the history of illegal copying of digital files since the early days of computing. The authors refer to these techniques collectively as the "Darknet." The paper is hardly notable for its views, but the source of those views suggests that the technical community has reached an important consensus with regard to DRM technologies and their resistance to Internet file swapping.

"A securely DRM-wrapped song is strictly *less* attractive (than those without DRM)," the researchers wrote. "Although the industry is striving for flexible licensing rules, customers *will* be restricted in their actions if the system is to provide meaningful security. *This means that a vendor will probably make more money by selling unprotected objects than protected objects. In short, if you are competing with the darknet, you must compete on the darknet's own terms: that is convenience and low cost rather than additional security.*"

(Emphasis added.)⁸

IV – Historical Experience of Copy Controls

A--The Music Industry's Experience Is Largely Irrelevant To This Proceeding

Proponents of the Co-Chairs' report assert that DTV will soon be “Napsterized,” or plagued with the same problems of widespread copying now faced by record companies. While it is simple to find some parallels between MP3 files and HDTV broadcasts, the analogy breaks down under examination. The basic properties of MP3s vs. those of High-Definition television govern basic laws of the marketplace and consumer behavior.

MP3 files, like the music one buys on a Compact Disc at a record store, are digital. But those same files occupy a tiny proportion of the space needed by conventional CD recordings. Even the highest-quality (and thus least compact) MP3 files average a mere four megabytes per three-minute song, or roughly 60 megabytes per 15-song album. A conventional audio CD, by contrast, consumes roughly 10 times as much space, or 600 megabytes per album. The difference between the two capacities is fundamental and grounded in a basic reality: The vast majority of consumers have neither time, opportunity, hard-disk space nor bandwidth to download music – legally or not – when a full album would take up nearly a half a Gigabyte. Thus, they must use MP3 file formats to compress the data into a manageable size.

But as with all compression, this ease of use comes at a price. MP3 sound quality is significantly lower than that of full-fidelity CDs. Thus, we believe it is misleading to assert that digital technology offers “perfect” reproduction of audio and video works. Rather, digital technology offers perfect reproduction only of the version of the recording that is placed on the network in the first place.

The 10-to-1 compression of MP3 is impressive, but ultimately results in significant loss of sound quality readily apparent to anyone with a stereo of even middling quality. For this reason, MP3 players now available on the market are overwhelmingly aimed at portable devices and not at the home stereo market; the sound quality is simply too low for more serious uses. The low quality of MP3 recordings puts into jeopardy the proposition that widespread file sharing poses an immediate threat to all recordings sold at retail. Likewise, the laborious chore of downloading files from peer-to-peer networks (connections often fail), checking their quality (“pirate” MP3s are often badly compressed, or compressed far beyond the limits of good sound quality), assembling those files and then burning them to disk (the process can take an hour or more) puts a real limit on the number of people who would rather undertake this onerous task than buy the recording.

We know that the record industry asserts that illegal copying of their wares accounts for their falling sales. Others suggest that there are other possible causes. They cite the current economic slowdown, the industry's recent elimination of singles, the end of cassette production, broadcast media consolidation, and less grooming of new talent. A

full examination of the recording industry's woes is beyond the scope of this proceeding. Nonetheless, the supposed causes of the record studios' woes -- MP3 reproduction -- is only partially relevant in the face of staggering bandwidth requirements of digital television. Thus, we question in the first place the aptness of comparing the real problems of the slumping record industry to the supposed difficulties of movie studios that are now ending their largest and most profitable sales year in history.

B--The Co-Chair's Report ignores our industry's 25-year history of combating illegal copying.

Finally -- and perhaps most importantly -- we refer the Commission to the *decades* of experience our industry has had with illegal duplication of software. We know first hand the toll of illegal copying, as well as the most effective ways to combat it. Consider this letter from a software developer in 1976 who, faced with infringement on a massive scale, asked owners of the then-popular Altair mini-computer to pay for the software they commonly copied in violation of the creators' rights.

"Who can afford to do professional work for nothing?," the developer wrote. "What hobbyist can put 3-man years into programming, finding all bugs, documenting his product and distribute for free? The fact is, no one besides us has invested a lot of money in hobby software ... Most directly, the thing you do is theft."⁹

As is apparent from that letter, our industry's battles with illegal copying are decades old. We have denounced it, we have argued, we have cajoled. We have introduced numerous anti-copying technologies, and found nearly all of them to be ineffective against the determined thief or hacker.

Yet, our industry remains alive and healthy.

We learned long ago that while we create some impediments to unauthorized copying. But we also learned that modern DRM technology is mostly only of keeping honest people honest. We also have learned that the more we restrict how our customers can use our products, the more likely they are to be annoyed. Indeed, our earlier attempts at copy control chiefly taught hackers how to crack inherently insecure systems. The result was an "arms race" of software developer vs. hacker.

That arms race at first did little more than deny users the ability to make back-up copies or perform other innocuous tasks. Later, it taught good hackers how to be better ones. With time, there arose a particularly corrosive attitude among consumers. Some users began to think that stealing software was somehow permissible, since -- in their mind -- producers treated customers poorly and interfered with their expected use of the products. It is small wonder, then, that the vast majority of software makers dropped the fight.

Today, software developers and their representatives routinely pursue, litigate against and assist in the prosecution of commercial infringers. Although illegal copying imposes costs on all software users, swift legal action puts a damper on such activity. At the same

time, we know that illegal copying is largely a crime of opportunity. When given the chance to buy software at reasonable prices through convenient online kiosks or stores, consumers will generally purchase software products through legal, authorized distribution channels. The software business, like all businesses, eventually comes down to trusting the vast majority of customers.

The co-chairs and those who agree with them – Hollywood, in particular – have chosen not to trust consumers. They now threaten not to make their goods generally available without onerous copy protection measures. The record companies, in particular, have refused to make their goods available online at prices that reflect the vastly lower costs of online distribution, or in places consumers find convenient. They have also refused to “unbundle” their content to allow consumers to purchase a single song at a proportionate price rather than an entire album. Consumers are now also faced with purchasing music and visual media embedded with draconian DRM technology that, threatens to become obsolete, and restrict their rights and expectations with regards to time- and space-shifting. As a result, many otherwise honest consumers have gravitated towards the flexible reproduction and distribution offered by online file-sharing networks.

Now, alarmed by the record industry’s own, predictable failure to stop unauthorized copying, Hollywood comes to the Commission and asks it to bless still another ill-conceived copy-control scheme. The studios believe that, all evidence to the contrary, the broadcast flag will stop copying from occurring this time around. The Commission should reject this argument as a basis for implementation of the BPDG proposal, notwithstanding the many adverse consequences that would clearly result from the plan.

V – Consequences of Adopting the Broadcast Flag

A--The Broadcast Flag Proposal Will Require Many More Mandates In the Future

The implementation of a broadcast flag is, by itself, a concern. But more important is the overall effort now underway to redesign not just consumer devices, but telecommunications networks and the Internet itself. If the Commission approves the proposal now before it, the Commission will have laid the groundwork for repeated future entreaties to the Commission and Congress by the same groups now seeking action by the FCC to implement the flag. As the Motion Picture Association of America (MPAA) and associated studios themselves told House and Senate committees earlier this year, the broadcast flag is only the first step of a three-pronged campaign.

Besides implementing the flag, Hollywood wants to “plug the analog hole” -- a widely used term for the fundamental and inherent flaw in any digital content protection scheme, whereby copy-control information can be removed via conversion of digital files to analog and back. Any proposal to “plug” this weakness in copy protection technology would necessarily require the regulation all devices capable of performing such conversion, in particular personal computers and many of their component parts such as digital-to-analog converter microprocessors. Any effort to ban such conversion

technology would be nearly impossible to enforce, since devices containing such technology are ubiquitous.¹⁰

The motion picture studios also want to “fix” peer-to-peer networks on the Internet by blocking copyrighted works from being retransmitted without authorization from copyright owners. There is no known technology capable of performing such an act precisely because the Internet's speed and efficiency depends on not examining the packets that pass over it.

This much, at least, is clear: The broadcast flag is only the first of many insoluble riddles. We believe that proceeding down this path will lead the Commission into morass of regulatory fights outside its jurisdiction and beyond its core competence. Once it has “solved” the “problem” of unauthorized digital recording, the Commission is sure to be asked to ban the conversion of analog signals to digital ones, and then ban peer-to-peer technologies themselves. The task before regulators is impossible using any known or expected technology.

Yet, even if this task were possible, the Commission would still need to reconcile this locked-up world of ideas with the basic principles of fair use. Since there is no apparent way to reconcile absolute control desired by some content companies with Fair Use, we believe the Commission would still have to err on the side of the First Amendment were such a technology to arise.

B--The BPDG Proposal Will Lead To a Morass of Incompatible Devices and Standards

To be sure, Hollywood has already anticipated that copy protection will eventually fail. Accordingly, it has worked into the BPDG proposal language that specifies broadly-stated objectives as defined by Hollywood, rather than actual technical standards. Approval of any one standard hinges on agreement of three separate movie studios, or the combination of two studios, plus ten consumer-electronics companies.

Issues of equity and fair competition aside, this open-ended arrangement is particularly problematic. As copy-controls break, the presumption is that the studios will find other technologies to take their place until they, in turn, are broken. In practice, this is likely to happen several times within the space of a year. This gives rise to several important questions. We wonder who, for instance, will bear the costs of constantly reengineering the array of devices and telecommunications networks that would be required to recognize and preserve the broadcast flag? In practice, dozens of kinds of devices could be implicated, affecting millions of such products in the hands of consumers. We also wonder what effect repeated redesigns will have on interoperability and compatibility among different devices and different manufacturers. As each new DRM technique arises, what assurance will consumers have that their old equipment will play older recordings? When the time comes to reengineer consumer devices, will the consumer electronics and high-tech sectors once again be expected to foot the bill? All of these

questions must be answered, yet none is within the Co-Chairs' report. The Commission should certainly take note of these inherent problems in its deliberations.

C--HDTV Programming Is Growing Quickly And Shows No Signs Of Slowing

Some content providers have asserted that they will withhold content from high-definition broadcast if their proposal is not adopted. We find this argument unpersuasive for many reasons, simple market forces among them. We also note the ever-growing availability of high-definition programming. The entirety of the CBS prime-time lineup is now being broadcast without benefit of the broadcast flag. Likewise, even pay-television programming is being provided without copy controls: Cable and Satellite networks such as Showtime, HBO, DiscoveryHD and HDNet, for instance, routinely run full lineups in ATSC format without activating any copy protection. If massive infringement were a problem with these networks, Congress and the Commission would be the first to hear of it. Indeed, HDNet founder Mark Cuban has explicitly rejected the broadcast flag and similar copy-control efforts as counterproductive to the high-definition transition.

VI – Legal Impediments to Adoption of the BPDG Proposal

A--The BPDG Proposal Abridges First Amendment Rights

The Co-Chairs' proposed Compliance and Robustness Requirements clearly compromise First Amendment rights of citizens who already have the right to record television broadcasts for their own use, as well as share at least portions of those programs with others.¹¹ But Hollywood, in fact, is asking for controls over *all* copying it does not authorize, as opposed to copying that is an actual copyright infringement.

Yet, if such restrictions are constitutionally troubling, they are even worse from a technical point of view. Today, it is basically impossible to copy-protect widely distributed digital content so that content owners can be reasonably sure they will stop significant exchange of illegal copies. Indeed, even if current and foreseen cryptographic techniques could protect online copyright, we know of no way to allow for a full range of customer rights and expectations while simultaneously giving copyright owners control over copying. This situation arises because the doctrine of Fair Use in American law has always held that much reproduction of copyrighted content is by its very nature unauthorized, against the wishes of the copyright holder, but also lawful. As long as there is overlap between lawful reproduction and the reproduction that copyright holders want to forbid, copy-protection seems certain to abridge First Amendment rights. Such is the case today, and will be the foreseeable future.

B--American Tradition, Innovation and Common Sense argue Against Heavy-Handed Regulation of the Internet

For years, the Commission, the White House, Congress, and even the Supreme Court have noted that information technology and the Internet are simply too young – and fast moving – to be tied down by strict government regulation. Time and time again, federal officials have rejected the idea that the Internet can be closely regulated. Yet, this is precisely the direction in which some would have this Commission head.

CCIA, therefore, urges the FCC to act with caution during this proceeding. As the Commission is aware, the mere existence or even approval of the multi-bit signal known as the broadcast flag is not at issue here. Rather, the Commission is being asked to decide what, if anything, devices must do when confronted with such a flag.

If the Commission decides to act on this proposal, we believe it should limit its action to recognizing the ATSC flag as a national standard for signaling a work's status under copyright law, but no more. Were the Commission to follow the wishes of the content community's most extreme proponents and require certain technologies to respond to this flag in a certain way, it would severely skew a nascent marketplace. Such a broadcast flag standard would freeze innovation, and grant control of a vital standard to a handful of companies in the content industry. Such an action would be anticonsumer, antibusiness, anticompetitive and fundamentally at odds with the Commission's mission.

We ask the Commission to uphold the most basic tenets of the Constitution, and to trust the market to produce solutions at least as good as those that certain studios want to force upon the rest of society.

C--BPDG Violates the Balance That Congress Has Struck

The BPDG proposal is merely the beginning of Hollywood's efforts to unravel the careful balance achieved by Congress just four years ago in the DMCA. This legislation was the highest priority of the content industry during the 105th Congress, and Hollywood executives and lobbyists exerted tremendous pressure to push the legislation through. CCIA and others in the technology and consumer electronics industry were reluctant to grant such broad new powers to copyright owners, but entered into good-faith negotiations to seek a workable balance of interests.

A key compromise reached during DMCA negotiations was §1201(c)(3) of the Act, the "no mandate" provision, which specifies that equipment manufacturers are not required to design new digital telecommunications equipment, consumer electronics and computing products to respond to any particular copy protection technology. Implementation of the BPDG co-chairs' proposal would renege on this critical agreement, and fundamentally alter the balance Congress sought in the DMCA. The BPDG co-chairs' report would require a broad mandate upon demodulators, modulators, and, through the mandatory license agreements of the "approved technologies" all

electronic devices, computer hardware, components and software used to process, record and view digital video content. Any such mandate should be based on a genuine, broad consensus achieved following a careful examination of all of the practical consequences and public policy repercussions. The current proposal fails to satisfy any of these requirements.

D--Government Action Must Be Fair and Equitable

Over the years, various interest groups have attempted to control the Internet. From pure-minded people who wanted to ban from the network anything one could call "indecent," to overreaching law enforcement agencies that have tried to limit online privacy and anonymity, more than a few groups have determined that their parochial interests outweighed the interests of society as a whole.

The Supreme Court cited just such interests in its groundbreaking ruling in *Reno vs. ACLU*. Confronting a section of the Telecommunications Act of 1996 that attempted to ban all public display of indecency from the Internet, the Court ruled swiftly and surely. Congress, the Court found, could not convert the entirety of the World Wide Web into something suitable for children. The First Amendment, the Court found, forbade such restrictions on the rights of the rest of society.

The threat to free speech is not as sweeping in this instance, but nonetheless, questions of balance are vital. As we note above, the Robustness and Compliance Requirements of the Co-Chairs proposal have failed to protect Fair Use and invite only more interference with it via futile attempts to "fix" the so-called analog hole and constraints on peer-to-peer technologies.

E--Economic Rationality Is Also Vital In This Proceeding

Together, the information-technology industry exceeds \$600 billion annual revenue, out of a total U.S. Gross Domestic Product of nearly \$11 trillion. Most of our economy depends upon the goods and services we provide to function. Given these facts, we now face a proposed governmental mandate on the design of our products in order to protect a sector of the economy that is significant, but still less than one-half of one percent of the total economy.

If the proposed burden is to be fairly distributed, our question is this: Who else will have free reign over the design of technology? What business consideration will next dictate computer network design? What politically entrenched interest will next petition Congress and the Commission to protect its interests at the expense of ours?

VII - Answers to specific questions posed by the Commission

As an initial matter, we seek comment on whether quality digital programming is now being withheld because of concerns over the lack of digital broadcast copy protection.

As we note above, the rapidly growing lineup of digital programming suggests that many broadcasters have no fear of the effects of HDTV on infringement. Indeed, bandwidth considerations give lie to the very idea that massive, illegal piracy will destroy the livelihood of MPAA members.

If the ATSC flag is the best means of protection currently available, but it still has technical flaws, is it better to mandate the flag now and monitor it as technology develops, or to wait until a more effective means of digital broadcast copy protection is developed?

The Broadcast Flag is already part of the ATSC standard. As such, there is no need to mandate its use, since any broadcaster is free to use it. That said, we believe it is clear that it cannot prevent Internet redistribution of content. Mandating its use would serve no useful purpose.

We seek comment on whether broadcasters and content providers should be required to embed the ATSC flag or another type of content control mark within digital broadcast programming, or whether they have sufficient incentive to protect such programming such that a government mandate is unnecessary.

Copyright holders are the parties most directly affected by illegal copying. We see no reason to require them if creators choose not to use them.

On the reception side, we seek comment on whether the Commission should mandate that consumer electronics devices recognize and give effect to the ATSC flag or another type of content control mark. If so, we seek comment on whether this mandate should include devices other than DTV broadcast receivers and what the resulting impact would be on consumers. More specifically, the BPDG Final Report anticipates that digital broadcast copy protection will begin at the point of demodulation. We seek comment on whether this is an appropriate point for digital broadcast copy protection to begin in consumer electronics devices. We also seek comment on whether and how downstream devices would be required to protect the content. In addition, we seek comment on whether and how an ATSC flag or other system would work for broadcast stations carried on cable or direct broadcast satellite systems.

As we outline above, the ATSC flag seems doomed as an effective element in a larger system of content controls designed to prevent Internet redistribution and other illegal copying. Likewise, we know of no mass-market DRM that can effectively prevent or significantly reduce Internet redistribution, let alone one that can also respect First Amendment rights. Were such a system possible, it would necessarily implicate all devices that handled any content. Indeed, almost any

device capable of processing data would eventually be part of the scheme. For these and other reasons, we have asked the Commission to abandon the BPDG proposal.

It is possible to pass on the Broadcast Flag over cable and satellite. Nonetheless, we do not think either industry would find the flag interesting, given that they already have their own copy-protection techniques. We note that each goes essentially unused, and each is as vulnerable to compromise as any other form of DRM.

As to the means by which digital broadcast copy protection would be achieved, we seek comment on whether to require the use of specific copy protection technologies, such as those identified in Table A to the BPDG Final Report, in consumer electronics devices. Table A identifies those copy protection technologies considered by BPDG for use in conjunction with digital outputs in consumer electronics devices, such as Digital Transmission Content Protection (“DTCP” or “5C”) or High-Bandwidth Digital Content Protection (“HDCP”).⁸ However, BPDG members were unable to agree on the criteria by which a copy protection technology would be evaluated and approved for digital broadcast use and chose to reserve the topic for potential further discussion by a CPTWG parallel group.

We seek comment on how a particular technology would receive approval for use in consumer electronics devices for digital broadcast copy protection purposes. We also seek comment on identifying the appropriate entity to make an approval determination.

We believe the market can and should determine which technologies are used to protect digital content. As difficult as the task may be, we see little purpose in trying to improve a failed initiative such as the BPDG. Our experience and common sense suggest that content producers need to accelerate their transition to new, more open business models rather than clinging to the false hope of copy protection.

We also seek comment on the extent to which broadcast copy protection technologies raise privacy concerns and whether rules are needed to ensure that consumers' privacy interests are protected. In addition, we seek comment on whether there are First Amendment or any other constitutional issues that we should consider from the point of view of the industries involved or individual consumers.

We see no clear privacy impact from the BPDG proposal. Our views of First Amendment implications are outlined in section VII.

Finally, we seek comment on the impact of the ATSC flag or other digital broadcast copy protection mechanism on consumers. The BPDG Final Report asserts that a broadcast flag system would not interfere with consumers' ability to make secure copies of DTV content for their personal use, either on personal video recorders or removable media.

Proponents of the BPDG process have presented a highly selective view of what their proposal would do. While it may be true that consumers could make digital copies to removable media, BPDG-approved media could not be played in another home or office, a portable MP3 player, a portable DVD player or a person's auto or vacation destination, since none of these places fall within a “personal environment.” Likewise, personal video

recorders (PVRs) would generally be tethered to a consumer's personal, in-house network. Restricting personal use to such a narrow environment is certain to upset consumers, add cost to equipment, and drive consumers away from digital TV.

Similarly, the BPDG Final Report states that the requirements to protect digital outputs should not interfere with consumers' ability to send DTV content across secure digital networks, such as "home digital network connecting digital set top boxes, digital recorders, digital servers and digital display devices." We seek comment on these assertions.

We agree with this assertion. Nonetheless, few consumers will be interested in buying home-tethered technology subject to overnight obsolescence when, as predicted, DRM fails.

We also seek comment on the appropriate scope of protection to be accorded DTV broadcast content. In addition, some parties have raised concerns about the potential impact of a broadcast flag requirement on consumers' existing and future electronic equipment. We seek comment on these concerns, as well as the potential effect of a broadcast flag requirement on the development of new consumer technologies.

Neither we, nor BPDG proponents, have a certain answer to the question of consumer impact – a fact which should give the Commission real pause. The BPDG process puts no limit on format changes or other incompatibilities some content producers may want to foist on consumers in the name of “stopping piracy.”

As we state numerous times above, we know of no way to discourage copying to the degree necessary to keep copies of copyrighted works from spreading widely over the Internet. Odd though it may seem to BPDG proponents, the vast majority of Americans pay for the copyrighted material they need and use. While there is illegal copying around the edges, our experience shows that the more one fights casual copiers, the more resentment they will feel against copyright holders. That resentment, in turn, eventually translates into contempt for copyright generally. All of these things suggest the BPDG proposal will fail.

Finally, we seek comment on the cost impact, if any, that a broadcast flag requirement would have on affected consumer electronics equipment.

No one knows what costs will be passed on to consumers. The mandate of the BPDG is open-ended and unending. Its costs have no limit.

VIII - CONCLUSION

As representatives of some of America's largest producers of copyrighted material, we know first hand the importance of protecting what one owns. But our experience and knowledge of the law tell us that there are limits to the control we may expect over copyrighted materials. As a matter of technology and law, the BPDG broadcast flag proposal is fatally flawed.

The digitization of increasing amounts of our cultural heritage follows precisely the revolution through which the rest of society has passed. We as a society have responded to that change by creating new ways of doing business, of governing and living, of buying and selling copyrighted materials

Not all are happy with this change. Like so many established powers, they now want to enlist the Commission in fighting a rear-guard action against the future. We urge the Commission to reject this call to arms.

Respectfully Submitted,

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ENDNOTES

¹[*See, e.g., Computer & Communications Industry Ass'n v. FCC*, 693 F.2d 198 (D.C. Cir. 1982), *cert. denied*, 461 U.S. 938 (1983)]

² *See* U.S. Const. art. I, § 8, cl. 8

³ *Sega Enterprises Ltd. v. Accolade, Inc.*: 977 F.2d 1510, 1527 (9th Cir.1993)

⁴ *See generally Sony v. Universal*, 464 U.S. 417. *See also* 17 U.S.C. §107

⁵We use the term “piracy “ only because others have chosen to do so. We in no way believe that the online practices of perhaps half of America's online households can reasonably be compared to robbery and murder on the high seas.

⁶MPEG is shorthand for the Motion Picture Experts Group, an industry body that governs standards for converting video to digital form.

⁷Bruce Schneier, Chief Technical Officer, Counterpane Internet Security, *Cryptogram*, May 2001, available at: <http://www.counterpane.com/crypto-gram-0105.html#3>

⁸*See*: Peter Biddle, Paul England, Marcus Peinado, and Bryan Willman, *The Darknet and the Future of Content Distribution*, available at: <http://crypto.stanford.edu/DRM2002/darknet5.doc>

⁹*See*: <http://www.blinkenlights.com/classiccmp/gateswhine.html>

¹⁰^{See}: http://judiciary.senate.gov/special/content_protection.pdf

¹¹*Sony Corporation of America et al.. v. Universal City Studios, Inc.. et al.*, 464 U.S. 417, 104 S. Ct. 774, 78 L. Ed. 2D 574 (1984)